

CLAIMS

1. An electromagnetic relay comprising, a stationary first member and a second member adapted to move towards and away from the first member such that when the second member moves towards the first member an electrical contact is closed, spring means for normally biasing said members apart, permanent magnet means for generating a force of attraction between said members, and selectively operable means for generating an electromagnetic force, wherein the permanent magnet means has a strength such that when the first and second members are apart the permanent magnet means is insufficient to overcome the spring means and wherein when the said members are brought together the permanent magnet means is able to hold the members together against the spring means, and wherein said means for generating an electromagnetic force can be operated in a first condition to provide an attractive force between said members sufficient with said permanent magnet means to overcome said spring means and to bring said members together, and in a second condition to provide a repulsive force between members sufficient with said spring means to overcome said permanent magnet means and move said members apart.
- 20 2. A relay as claimed in claim 1 wherein switch means are provided whereby said means for generating an electromagnetic force is switched off when said members are brought together.

3. A relay as claimed in claim 2 wherein said switch means is adapted to turn on said means for generating an electromagnetic force in the event of an accidental displacement of said first and second members.
 - 5 4. A relay as claimed in claim 1 wherein said permanent magnet means is provided on said movable second member.
 5. A relay as claimed in claim 1 wherein said means for generating an electromagnetic force is provided on said fixed first member.
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6. A relay as claimed in claim 1 wherein said first and second members comprise a pair of U-shaped magnetic yokes, the arms of said yokes facing each other.
 - 15 7. A relay as claimed in claim 6 wherein the permanent magnet means are provided at the ends of the arms of one said yoke.
 8. A relay as claimed in claim 6 wherein the means for generating an electromagnetic force comprises a coil wound around one said yoke and means for supplying current to said coil.
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9. A relay as claimed in claim 8 wherein means are provided for selectively supplying current in opposite directions to said coil to generate said attractive and repulsive forces.

10. A relay as claimed in claim 9 including an electronic control circuit for supplying said current to said coil.

5 11. A relay as claimed in claim 10 wherein said control circuit includes switch means for turning said relay on and off, wherein when said relay is turned on said circuit provides a current to said coil in a first direction to generate said attractive electromagnetic force and at the same time a capacitor is charged, and wherein when said relay is turned off said capacitor discharges to supply a current to said coil in the opposite direction to generate said repulsive electromagnetic force.

10 12. A relay as claimed in claim 11 wherein when said first and second members are brought together a microswitch is operated to open said circuit supplying current to said coil.

15 13. A relay as claimed in claim 10 wherein said control circuit is adapted to receive an AC power supply and includes rectifying means.